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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/675,207 | 09/30/2003 | Kevin Lancon | Flowserve C-94 | 9935 |
| 23474 | 7590 | 04/29/2005 | EXAMINER | |
| FLYNN THIEL BOUTELL & TANIS, P.C. 2026 RAMBLING ROAD KALAMAZOO, MI 49008-1699 | | | PRUCHNIC, STANLEY J | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2859 | |

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/675,207

Applicant(s)

LANCON ET AL.

Examiner

Stanley J. Pruchnic, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 Feb 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application, by application number and filing date, is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The full name of each inventor (family name and at least one given name together with any initial) has not been set forth.

Claim Objections

2. Claim 13 is FINALLY objected to because of the following informalities:
 - In Claim 13, Line 4, please delete "are" before "moved" in order to correct an obvious grammatical error.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-22 are FINALLY rejected under 35 U.S.C. 103(a) as being unpatentable over US 6260004 B1 (Hays; Coy L. *et al.*, hereinafter **HAYS**) in view of US 6078874 A (PIETY *et al.* hereinafter **PIETY**).

HAYS discloses or suggests a method for monitoring the operating conditions of one or more, or a plurality of units, of rotating equipment 14 (which may be a pump 14; Col. 10, Lines 18-26; Col. 21, Lines 10-22, and regarding Claim 1, a pump is known to separate process fluid from the lubricating fluid by means of a seal) within a facility, said rotating equipment including relatively rotatable parts which comprise a rotating shaft (Col. 2, Lines 56-59), bearings (Col. 2, Lines 59-62; Col. 14, Lines 5-7) which support the shaft and a shaft seal assembly which seals a sealed fluid (Col. 13, Lines 19-25) within said rotating equipment to prevent said sealed fluid from leaking along said shaft, said rotating equipment having exterior surfaces which have surface temperatures which indicate the respective operating temperatures of the rotatable parts, the method comprising the steps of:

providing a portable temperature data collector ("portable hand-held data logging device" 142; Col. 17, Lines 64-67) which is manually movable within said facility by an operator, said temperature data collector including a temperature sensor which is manually positionable adjacent to said exterior surfaces to detect said surface temperatures of said exterior surfaces and which generates temperature data indicating said surface temperatures detected thereby, said sensor communicating with a data

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storage unit 56 which receives and stores said temperature data for subsequent analysis;

defining temperature sensing locations on said rotating equipment respectively corresponding with each of said rotatable parts wherein said surface temperature on said rotating equipment at each said sensing location indicates the operating temperature of said respective rotating part corresponding thereto;

performing a temperature data collection procedure on said rotating equipment at a collection time to determine the operating temperatures of said respective rotatable parts at said collection time, said temperature data collection procedure comprising the steps of

manually transporting said temperature data collector within said facility to an equipment location proximate each said unit of said rotating equipment being monitored,

manually positioning said temperature sensor adjacent to a plurality of said sensing locations,

detecting said surface temperatures of said exposed surfaces at said plurality of said sensing locations with said temperature sensor and

generating said temperature data corresponding to each of said sensing locations,

storing said temperature data in said data storage unit 56, and

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manually removing said temperature data collector from each said equipment location after obtaining said temperature data for said sensing locations within said equipment location;

repeating said data collection procedure at subsequent collection times to detect and store said temperature data for each said collection time wherein said collection times are spaced from each other by selected time intervals and said temperature data collector is transported to each said equipment location and then removed therefrom at the end of each said data collection procedure;

storing said temperature data associated with each of a plurality of collection times to develop historical data for each said sensing location; and

analyzing said historical data (Col. 12, Lines 34-52) by comparing the temperature data from a last said temperature data collection procedure with the temperature data from a prior said data collection procedures to identify abnormal changes in said operating temperatures of said rotatable parts (further regarding Claims 2-5, it would have been obvious to choose any of the previous sets of measured data in order to determine or sense that a temperature change has occurred; and

operating said rotating equipment in response to any said abnormal changes identified by said analysis (Col. 15, Lines 1-15).

Further regarding Claim 16: HAYS includes the step of providing a processing unit (e.g., a host computer 236; Col. 17), which receives said temperature data and analyzes said historical data. Further regarding Claims 17 and 18: HAYS discloses or

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suggests a step of transferring said temperature data to said processing unit after each said temperature data collection procedure, connecting said temperature data collector to said processing unit for said transferring of said temperature data (Col. 18, Lines 1-35).

HAYS, as described above, discloses providing a manually positionable data collector, but does not explicitly disclose said data collector is a temperature data collector including a temperature sensor which generates temperature data indicating said surface temperatures as claimed by Applicant in Claim 15, and wherein said data collection procedure includes detecting said surface temperatures of said exposed surfaces at said plurality of said sensing locations with said temperature sensor. And regarding claims 1 and 5, the surfaces being adjacent to both bearings and seal passages. OFFICIAL NOTICE is taken with respect to positioning the temperature sensor adjacent the seal passages, since absent criticality, this is nothing more than an obvious modification of the position selected by HAYS, wherein a change in temperature would indicate a problem with the rotating machinery.

Further regarding Claims 19 and 20: HAYS, as described above, discloses the sensor is a portable sensor, but does not explicitly disclose the method wherein one said sensor is used for detecting a plurality of said sensing locations and wherein said portable sensor is manually directed toward each said (temperature) sensing location to detect said surface temperatures.

Further regarding Claims 21 and 22: Hays discloses vibration monitoring systems are available in portable "walk around" versions, understood in the art to be used as

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claimed by Applicant, wherein each data collection procedure at each said collection time includes positioning said sensor at a plurality of said equipment locations corresponding to plurality of units of said rotating equipment such that said data for each said collection time relates to said plurality of said units of said rotating equipment. In such systems, data for said plurality of said units of said rotating equipment is stored in said data storage unit until the end of said data collection procedure as claimed by Applicant in Claim 22. But HAYS, as described above, does not explicitly disclose the method applied to the **temperature data collection procedure** as claimed by Applicant in Claims 21 and 22.

HAYS, to summarize, is shown to teach all of the limitations as claimed by Applicant, with the exception of the temperature data collection procedure includes providing a temperature data collector including a portable temperature sensor that is **manually directed** toward each of a plurality of sensing locations having surface temperatures **which indicate the respective operating temperatures of the rotatable parts as claimed by Applicant.**

PIETY discloses that a portable bearing temperature sensor and a portable vibration sensor are art recognized equivalent sensors for periodically measuring operating characteristics useful in predictive maintenance programs for rotating machines (Col. 1, Lines 25-45; Col. 3, Lines 8-12; Col. 6, Lines 7-18).

PIETY discloses it is known in the art to include a portable bearing temperature sensor in addition to a portable vibration sensor in a method for monitoring the operating conditions of units of rotating equipment (Col. 3, Lines 8-12; Col. 6, Lines 26-38).

PIETY further discloses that it is advantageous to include a portable bearing temperature sensor in addition to a portable vibration sensor in order to benefit from the ability to sense different machine characteristics (Col. 6, Lines 26-38).

PIETY is evidence that ordinary workers in the field of predictive maintenance would recognize the benefit of using a temperature sensor as taught by PIETY for the vibration sensor of HAYS in order to benefit from the ability to sense different machine characteristics.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute or add a temperature sensor for the vibration sensor of HAYS in order to benefit from the ability to sense different machine characteristics as taught by PIETY.

When the method of HAYS is modified to use a temperature sensor as taught by PIETY, the one said sensor is used for detecting a plurality of said sensing locations and said portable sensor is manually directed toward each said (temperature) sensing location to detect said surface temperatures in order to measure the surface temperature as taught by PIETY.

Response to Arguments

6. Applicant's arguments with respect to claims 1-5 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the form PTO-892 and not mentioned above disclose related operating condition monitoring devices and methods.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stanley J. Pruchnic, Jr., whose telephone number is **(571) 272-2248**. The examiner can normally be reached on weekdays (Monday through Friday) from 8:30 AM to 4:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez (Art Unit 2859) can be reached at **(571) 272-2245**.

10. The *Official FAX* number for Technology Center 2800 is (703) 872-9306 for all official communications.

Any inquiry of a general nature or relating to the status of this application or proceeding may be directed to the official USPTO website at www.uspto.gov or you may call the USPTO Call Center at 800-786-9199 or 703-308-4357. The Technology Center 2800 Customer Service FAX phone number is (703) 872-9317.

The cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site, from the Office of Public Records and from commercial sources.

Private PAIR provides external customers Internet-based access to patent application status and history information as well as the ability to view the scanned images of each customer's own application file folder(s).

For inquiries relating to Patent e-business products and service applications, you may call the Patent Electronic Business Center (EBC) at 703-305-3028 or toll free at 866-217-9197 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: ebc@uspto.gov. Additional information is available on the Patent EBC Web site at: <http://www.uspto.gov/ebc/index.html>.

SJP

Stanley J. Pruchnic, Jr.
27 April 2005



**GAIL VERBITSKY
PRIMARY EXAMINER**